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SCIENCE NEWS-Letter

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May 17, 1930



RHINOCEROS PREHISTORIC

Polish Prof. Stach Measures The Skull

(See page 319)

Vol. XVII

No. 475

Try To Stunt Growth of T B Germ

Medicine

Reducing Glycerin in Body New Method of Attack

PIONEER attempts to stunt the growth of the tuberculosis germ in the body by cutting down the supply of growth-promoting food, glycerin, were reported by Drs. Esmond R. Long and Arthur J. Vorwald of Chicago to the National Tuberculosis Association.

Glycerin is regularly used to promote growth of the human type of tuberculosis germs when these germs are grown outside the body on artificial culture media. Up to a certain limit the amount of growth is directly proportional to the amount of glycerin present. Glycerin is also present in the blood and tissues of the human body, although the exact amounts are not known.

The Chicago investigators found that by increasing the amount of glycerin in the body of animals infected with tuberculosis, they could greatly increase the growth of the germs in the body. Attempts at decreasing the concentration of glycerin apparently produced a moderate reduction of the number of tuberculosis germs and of the extent of the disease.

Because of lack of adequate chemical methods, the investigators are not sure whether the apparent reduction was actually the result of removal of free glycerin from the body, as planned.

Suffocate It

EXPERIMENTS indicating that suffocation and starvation are weapons with which the body fights the invading tuberculosis germ, were reported by Dr. R. O. Loebel, E. Schorr, and H. B. Richardson of New York.

These investigators studied the respiration of tuberculosis germs and the amount of oxygen the germs need in order to live and to reproduce. They also investigated the kinds of food material needed by the germs.

From their studies, they believe that the clumps of cells called tubercles

which the body forms around the invading germs of tuberculosis would effectively hold the germs in check in part, at least, by cutting down their supply of oxygen and of food which would amount to suffocating and starving them out.

Race

THAT a search for differences in body structure and function between negroes and whites may reveal the explanation for the striking difference between the two races in their response to infection with tuberculosis, was suggested by Dr. Max Pinner of Detroit.

The fact that tuberculosis kills many more negroes than white people in this country cannot be entirely explained on the ground of living conditions, crowding, lack of hygienic care and cleanliness, because, as Dr. Pinner pointed out, the Jewish community in

The Answer Is In This Issue

Why are negroes more prone to tuberculosis than whites? p. 306—What leafless plant is good for food? p. 306—How many organic compounds have been described physically and chemically? p. 307—What anesthetic is most efficient applied to eyeball? p. 307—Does iodine corrode metal? p. 307—What inventors hold over five hundred patents each? p. 308—Who invented the watt-hour meter? p. 308—Under what circumstances were the "Java-Man" bones found? p. 310—How can food be kept at high temperatures? p. 312—Where are scientists hunting for traces of the earliest Americans? p. 313—What are the difficulties of high magnification photography? p. 314—What are the Dutch doing to combat alcoholism? p. 316—Where can one see remains of twelve fossil forests? p. 317—What means are used to combat the old-world locust? p. 319.

lower New York, with living conditions similar to those of the Negro community, has the lowest specific death rate from tuberculosis in New York City.

The Negro's reaction to tuberculosis seems to be characterized by a high degree of susceptibility and a low degree of immunity, Dr. Pinner stated. The reasons for this may be found in racial characteristics of an anatomical or functional nature.

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Bread in the Desert

A PLANT with flowers but no leaves, that gets most of its food by tapping the roots of other plants and grows to be ten or twenty times as heavy as its host, yet without causing the latter any apparent injury, was described to the National Academy of Sciences by Walter T. Swingle of the U. S. Department of Agriculture. It has the further distinction of being good for human food, and of maturing a good crop on as little as three inches of rain a year—believed to be a record for food plants possible in dry regions.

It was originally discovered about eighty years ago, in the desert near the California-Mexico boundary, but until a little over a year ago remained a great rarity. Now, however, it has been rediscovered in great abundance, and has received its first thorough botanical study. Its botanical name is *Ammobroma sonorae*.

The part used for food is the thick, fleshy root, in which the plant stores water and a reserve of food material. The original discoverers found the Papago Indians using it for food, and when they tried it roasted over a fire they found it very good. Mr. Swingle suggested that inasmuch as no other useful plant can be induced to grow in this arid region, it might be worth while for the white man to follow the lead of the Indian on a larger scale.

*Botany
Science News-Letter, May 17, 1930*

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Thousands of Drugs Await Discovery

Pharmacology

New Uses Also Predicted At Decennial Convention

NEVER in the history of the world have the possibilities of adding to the list of valuable drugs been so great as at the present time, Dr. Reid Hunt, president of the United States Pharmacopoeial Convention, declared at the convention's decennial meeting at Washington.

We may yet get more drugs from the plant and animal kingdoms. There is no limit to the number that the chemist and the pharmacologist may synthesize in their laboratories. But even more important is the possibility that new and important uses may be found for drugs which we already have, Dr. Hunt said. He is professor of pharmacology at Harvard Medical School.

Some of the saddest pages in the history of mankind have written on them the failure of physicians to see the possibilities for treating disease with well-known chemicals. Ether was known to doctors and chemists



Dr. Lyman Spaulding, founder of the U. S. Pharmacopoeia

for nearly 300 years before it was used as an anesthetic, Dr. Hunt pointed out. Another drug, amyl nitrite, a few drops of which relieves the frightful agony of one form of

heart disease, was well known to chemists for 23 years before it was used to treat this condition. The same delayed application was repeated in the case of other anesthetics and many other drugs. They were well-known chemically for years before anyone tried them in the treatment of disease and for the relief of pain. Today, said Dr. Hunt, "relief may be obtained anywhere in the world for a few cents, which fifty years ago was beyond the reach of any potentate or Croesus."

Research is needed to investigate the medical possibilities of the 258,000 organic compounds which chemists have already carefully described chemically and physically, Dr. Hunt said. New compounds are being added to the list at the rate of about twenty a day. Dr. Hunt declared America's facilities for studying the medical applications of these new compounds are very inadequate compared with research activity in Germany and other European countries.

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Drug Standardization May Save Babies

Pharmacology

A NEW chemical method of standardizing a drug widely used in childbirth may be the means of saving countless lives of mothers and babies. The drug is ergot. The new method of standardizing it, which is a chemical, colorimetric method, was devised by Dr. M. I. Smith of the U. S. Hygienic Laboratory, who reported it to the meeting of the American Pharmaceutical Association at Washington.

The method requires much less experience, less time, less trouble and is more accurate than the physiological method which is given as the standard by the present U. S. Pharmacopoeia, Dr. Smith said.

The Pharmacopoeia, which is the legal standard for drugs and medicines, will be revised this year.

Dr. Smith believes that a biological method of standardizing ergot, developed by Professor Clark of the University of Edinburgh, is better than that given in the U. S. Pharmacopoeia. His new chemical method agrees well with this English one.

Ergot is a complex drug containing many chemical substances,

among them alkaloids. It is the alkaloids which are important, but not all of them are physiologically active. Chemical methods of determining the alkaloids were described many years ago, but Dr. Smith's method is the first to determine quantitatively the physiologically active alkaloids of ergot.

Some 40 samples of fluid extract of ergot were examined by his method, of which ten were commercial extracts ready for the market. These varied in potency as much as 500 per cent., the strongest being five times as strong as the weakest, Dr. Smith reported.

This difference may be very serious when the drug is given to a mother in childbirth. The dose given is for ergot of a standard strength but the physician has no way of telling whether the ergot is standard or not and must rely on the label on the container.

Manufacturers cannot come up to the U. S. Pharmacopoeia standards chiefly because they have not a good method of standardizing the drug, Dr. Smith commented. He believes

his method gives them the means of producing uniformly standard ergot.

New Anesthetic

STUDIES of a new local anesthetic, nupercain, were reported by W. R. Bond and N. Bloom. The new anesthetic was introduced by the Society of Chemical Industry at Basle, Switzerland. It is claimed to be better than cocaine for local use. Pharmacists Bond and Bloom found that it is five times as poisonous as cocaine, but can be used in one-tenth the concentration. It is most efficient as an anesthetic when applied to the cornea of the eyeball.

Corrosive

STUDIES on how iodine corrodes metals were reported by B. L. Meredith and W. G. Christiansen of Brooklyn, N. Y.

Several alloys of metals that are resistant to most chemicals were experimented on. Both molten and vaporous iodine were used. All the metals were corroded by iodine, the investigators found.

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Next To Edison—

Who Has the Greatest Number of United States Patents?

By Marjorie Van de Water

EDISON, O'Connor, Thomson, Ellis, Fessenden—so reads the honor roll of American inventors. The five inventive geniuses, leading the list, hold among them a total of more than 3,500 United States patents.

One of these men, John F. O'Connor, a Chicago inventor of railway devices, has been securing an average of more than two patents a month for over a quarter of a century.

Dr. Elihu Thomson, Carleton Ellis, and Dr. Reginald Fessenden, each of these names stands for over five hundred inventions added to those on file in the Patent Office.

Thomas A. Edison, the most prolific American inventor, has been granted more than a thousand U. S. patents, and these cover such a wide field as to give almost a cross-section of modern mechanical and electrical progress.

Some of his patents are now famous throughout the entire world. The incandescent lamp means Edison's lamp to many thousands who may be reading these words by light from an electric lamp. Others of his patents are for inventions which have never been exploited, which are probably forgotten by everyone except the few who may come across them in their various places in the Patent Office files. How many people connect this famous inventor with the field of aviation? Yet in 1910, when the art of designing aircraft was still in long clothes, Thomas A. Edison of Llewellyn Park, was granted Patent No. 970,616 for a "flying machine." The drawings show an object strange enough to our eyes accustomed to craft like the Graf Zeppelin or the giant Dornier. It was designed to be propelled by a series of box kites which were to revolve about a central hub.

In the same year, Edison also received a patent for an automobile. He also has a British patent for a toothache remedy.

John F. O'Connor also holds a very large number of patents. But unlike

Edison, he has achieved no world-wide fame. Indeed his name is practically unknown outside the small circle of engineers and officials who have done business with him.

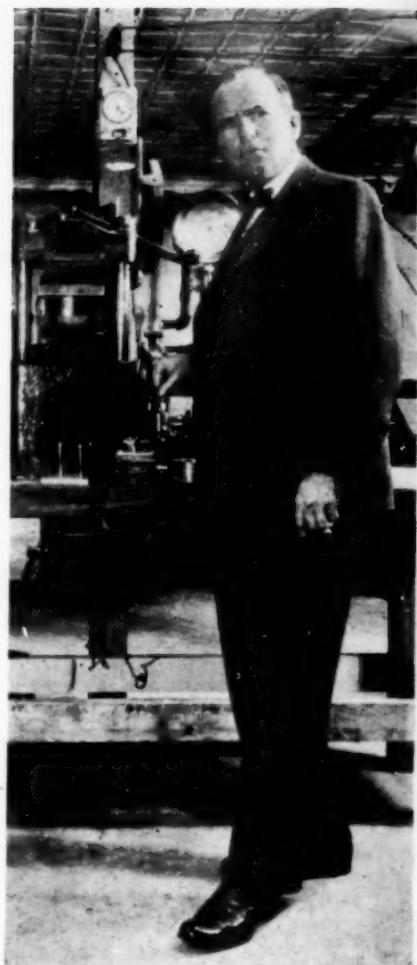
He is now employed as consulting engineer by the W. H. Miner Company of Chicago, and he has been getting patents steadily and regularly ever since the first year of this century. There is now never a time when he does not have at least a hundred patents pending action in the Patent Office.

Perhaps the reason why Mr. O'Connor has received no public acclaim for his achievements is because he deliberately avoids publicity. It is seldom that a man so successful remains so retiring. And yet the story of his career is as romantic as Horatio Alger's imaginative stories of success.

Mr. O'Connor came to this country as a young boy from Ireland, and attended the public schools here. Like many another ambitious youth he later worked in the daytime and studied correspondence courses at night. He started work when a lad of 15 years in the arduous but educational position of "boy." Gradually he climbed the ladder, passing the rungs of machinist's helper in a paper factory, then foreman machinist. Then machinist in a railroad shop; then inspector of new locomotives; then foreman of shops. From 1900 to 1904 he worked for a railway supply company as mechanical engineer. In 1904, he took his present position as consulting engineer for the W. H. Miner Company.

During the period between 1900 and 1904 he took out about ten U. S. patents, mostly relating to railway devices. Since he joined the Miner Company he has been granted over eight hundred.

One of the most important of these patents is for a device which indicates with extreme accuracy the reaction developed upon impact of two bodies at high speed. It was designed for



Carleton Ellis in his Laboratory

use in measuring the strain endured by that very important part of a railway car, the draft gear.

The function of the draft gear is to receive the shock, from the coupler, of the impact when two railway cars crash together as a train comes to a sudden stop, and to dissipate this shock without harm to the railway car. The blows which this small part must endure vary from a few thousand pounds to 500,000 pounds or even more, and the time within which this blow must be absorbed and transmitted to the under frame of the car is infinitesimal, requiring generally less than a tenth of a second. It is obvious that comparison of various types of gears and selection of the best type for withstanding this peculiar type of strain, is of the utmost importance to railway safety and comfort.

Previous to the invention of Mr. O'Connor's device, the only methods available for testing the degree to which a draft gear can stand up under strain were by hammer blows or by the application of slow pressure. These methods could not determine

whether the gear was capable of absorbing extreme shocks in the very short time in which the gear is required to do its work when in actual use. Mr. O'Connor's invention is a simple, accurate, automatically operated mechanism for registering the entire action of the gear from the beginning of the blow until the gear has recovered and returned to normal position, although all this action occurs in much less than one second.

Next in the race for the greatest number of patents is another famous inventor, Dr. Elihu Thomson, who has more than seven hundred on file in the U. S. Patent Office. Dr. Thomson, like Mr. Edison, has the whole world for his field, but he also specializes in electricity. One of his important inventions is the method of electric welding that bears his name. Others are the watt-hour meter, the present transformer system, the first three-phase winding of dynamo-electric machinery and the centrifugal cream separator. Another is the method of making fused quartz which will make possible a huge quartz mirror sixteen feet, eight inches in diameter for the largest telescope in the world. And yet he has also invented a music sheet-guiding device for a mechanical piano.

In 1895, the Commissioner of Patents listed an honor roll of inventors having at that time more than one hundred patents. Only twenty-five names appeared on the list, and Elihu Thomson was one of the number. He had at that time 444 patents. He now heads a research laboratory of

the General Electric Company which bears his name, and is guiding other promising inventors in his own footsteps.

A chemist is fourth on the list of prolific patentees. That is Carleton Ellis. His original field was paints and varnishes, but he has been a pioneer in the field of plastics. He has also written on the "Vital Factors of Foods," and "Ultra Violet Light." And one of his patents is for a paint remover.

Next comes Dr. Reginald Fessenden who received a medal last year for the devices he has invented for safety at sea. His patents cover instruments for measuring the depth of the sea by means of echoes from the bottom, and also an iceberg detector, wireless telephone, a wireless compass, a submarine oscillator, and a wave meter. Altogether they total over 500, many of them obtained in the 1800's.

Reuben B. Benjamin has also made electricity the field for his inventive genius. He is president of an electric manufacturing company and has himself taken out many of the patents manufactured by it. Over 300 have been granted to him.

It is somewhat strange that in this list, the next man holding a large number of U. S. patents is not an American at all. He is Arthur T. Dawson of England, who has over 300 U. S. patents. They are all related to guns, for he is connected with the world famous Vickers firm.

Dr. Elmer A. Sperry is another inventor who appeared on the honor

roll in 1895. He then had 132 patents; he now has over 300. He is, of course, best known for his gyroscope, which has made possible, among other applications, automatic pilots for airplanes.

One more man has over 300 patents, and that is Ethan I. Dodds, of Pittsburgh. His inventions have to do with boilers.

Erastus E. Winkley has nearly 300, most of them dealing with shoe machinery, for he is connected with the United Shoe Machinery Company. But he also has a patent on an equilibrator for a flying machine and one for an appliance used in playing golf.

Another foreigner having patents on guns is Eugene Schneider, of Paris.

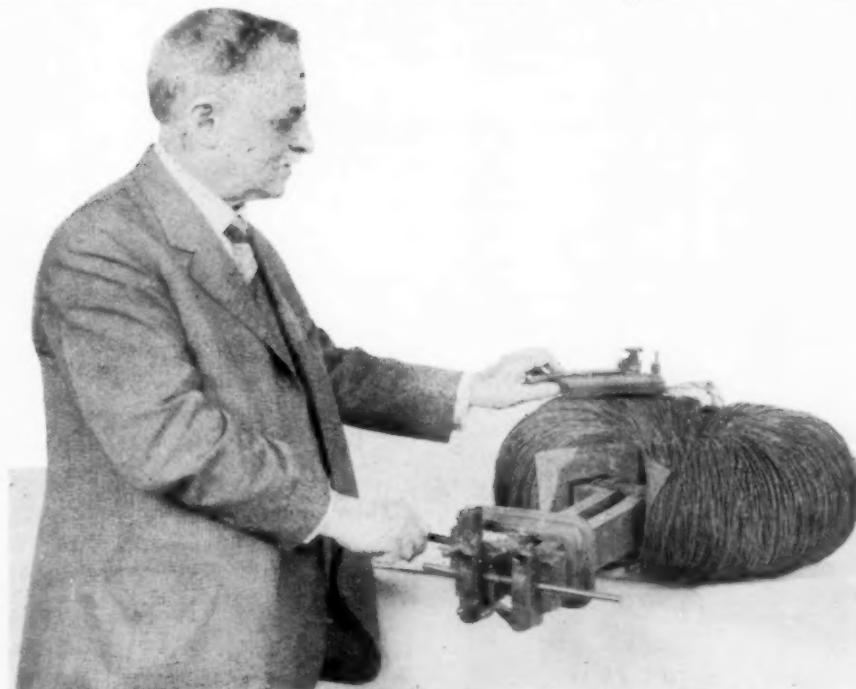
And there is still another inventor having over two hundred patents. C. Francis Jenkins of Washington is another world famous inventor, and he has gained his prominence especially in the fields of photography and electricity. Probably most interesting are his patents on television and motion pictures.

It is somewhat remarkable that no women appear in the lists of outstanding inventors. One woman, Miss Beulah Louise Henry, who has gained a great deal of publicity as a "Lady Edison" is credited with fewer than fifty inventions. This number is large for a woman inventor, but very small compared with the male inventors mentioned and many others, the listing of whom would be impossible in a short article.

Less than two per cent. of the patents issued by the U. S. Patent Office have been issued to women. And this proportion has remained practically constant over all the years of this century. It would seem that the field of invention along patentable lines is still a man's field, almost untouched as yet by women.

Nor is the inventive ability particularly common among men. The patents issued annually by the United States Patent Office number only one for every 2,400 of the population. Yet it is more common now than formerly.

If you should invent some new mechanism or process during the coming year, and should obtain a patent on it, the number of your patent would be a figure with seven places, since 1886, when (*Turn to page 318*)



Dr. Elihu Thomson
with one of his inventions.

Pithecanthropus Erectus

PART ONE

— A Classic of Science

Anthropology

PITHECANTHROPUS ERECTUS—*A Form from the Ancestral Stock of Mankind.* By Eugene Dubois. Part of a paper read before the Berlin Anthropological Society on the 14th of December, 1896. Translated from the *Anatomischer Anzeiger*, Vol. XII. Published in the general appendix to the Smithsonian Report for 1898. Washington, 1899.

THE fossil remains upon which I have founded this new species consist of a calvarium, or skullcap, two upper molars, and a femur. With the exception of one tooth, the second upper molar on the left side, they have already been described by me in a paper published in Batavia in 1894. It now seems desirable to give some special details.

It is well known that a not inconsiderable number of anatomists and zoologists hold diametrically opposite views regarding the significance of these remains. For instance, as to the skull, a few have believed that it is human, although of much more ape-like appearance than hitherto known, while others have considered it the skull of an ape far more human in character than any previously discovered. It is remarkable that only a few have believed in a third possibility, intermediate between these two views, viz., that we have before us here a transition form between apes and men that is neither man nor ape. Recently this intermediate view has made quite significant progress, and a considerable number have accepted it. As to the anthropologists and pitheciasts, as the upholders of the extreme views may be called, the former find their fossil Java man more ape-like than they at first did, while the latter have placed their most anthropoid of apes still a few steps higher on the ladder of ascent toward man. These views now tend to coincide still more, because in the meantime it has been possible to test them by an exhibition of the objects themselves, and I have been able to give further particulars,

The rocks at Trinil where the pithecanthropus bones were found:—A, area of growing plants; B, soft sandstone; C, lapilli stratum; D, level at which the skeletal remains were found; E, conglomerate; F, argillaceous layer; G, marine breccia; H, wet-season level of the river; I, dry-season level of the river.

It was a day of startled awakening in the field of biology when Dubois dug up in the wilds of Java the oldest human bones—or the most advanced ape bones—that the understanding human eye had seen. The site of the find is described in the "Classic" for this week, and next week, in part two, the discoverer's description of the bones will be reprinted.

especially as to the circumstances under which the remains were found.

For the proper interpretation of these osseous remains the circumstances under which they were found is quite as important a factor as the anatomical considerations. I will therefore first give some particulars regarding their situation when discovered.

Near the remains that are the subject of this paper I have collected in Java, at Trinil, in the Ngawa district of the Madium Residency, a great number of fossil skeletal parts of other vertebrate animals belonging to the same species as those found by me during five years of researches at many other places in the same strata, which lie exposed over some hundreds of square kilometers. To judge from the uplifting which these strata have undergone, in the course of which they have all been tilted (at Trinil about 5 degrees south), and also from other geological evidence, they are older than the Pleistocene, apparently older than the early Pliocene. They are of a fluviatile character, and lie, more than 350 meters thick, unconformably, upon marine strata, which K. Martin, in Leyden, has determined as Pliocene.

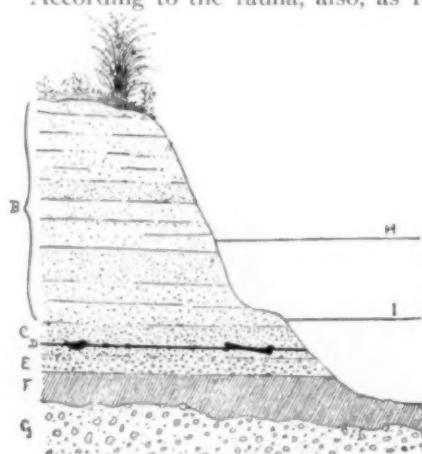
According to the fauna, also, as far

as I have been able to study it up to this time, it is highly probable that the strata are early Pliocene. This fauna is very similar to the fossil vertebrate fauna of western India, but appears to be younger than the Siwalik fauna of the early Miocene or later Pliocene and somewhat older than the fauna of Narbada, which has been placed in the earliest Pleistocene.

At the place where the remains were discovered at Trinil the strata, everywhere composed of volcanic tufa, lie exposed in the cliff-like declivity of the bank of a river of considerable size, the Bengawan, or Solo. They usually consist here of a sandstone of slight consistency which, in its deeper layers, at about the level of the river during the dry season, becomes coarser and coarser as more and more lapilli or volcanic stones form part of its composition. The bones are found throughout the entire thickness of the sandstone strata, being very numerous in the lower half, and most so in the stratum, about 1 meter thick, in which the lapilli are found. In the conglomerate which lies under this I found but few, and none at all in the subjacent argillaceous layer.

The four fragments of the skeleton of Pithecanthropus were found in different years, because, on account of the rise in the river during every rainy season, the excavations were necessarily suspended and could not be resumed until the next dry season. Besides, in the same working season one fragment was found later than the other, because the stone had to be removed cautiously in layers and by marked off areas.

The four fragments were, however, found at exactly the same level in the entirely untouched lapilli stratum (fig. 1). They were therefore deposited at the same time; that is to say, they are of the same age. The teeth were distant from the skull from 1 to, at most, 3 meters; the femur was 15 meters away. The quite sharp relief of their surface does not support the theory that they have been washed out from some older layer and then embedded for a second time. They were found at the place of their original deposit. Besides they all show exactly the same state of preservation



and of petrefaction as do all other bones that have been taken from this particular stratum at Trinil. Their specific gravity (sp. gr. of compact tissue = 2.456) is much greater than that of unpetrified bones (sp. gr. of compact tissue = 1.930). The femur weighs 1 kilogram, therefore considerably more than double the weight of a recent human femur of the same size; the medullary cavity is partly filled with a stony mass. The eroded upper surface which the skullcap and not the femur shows occurred in the bed where it was found, appearing on many bones excavated near the skullcap, and is caused by infiltration of water through the cliff at that place.

Associated with these bones I also found very numerous remains of a small axis-like species of *Cervus*, frequently, also, the remains of *Stegodon*. Farther away were found *Bubalus*, apparently identical with the Siwalik species, *Leptobos*, *Boselaphus*, *Rhinoceros*, *Felis*, *Sus*, *Hyæna*, that all appear to be of new species. Of species found in other situations of the same stratum I will mention a gigantic *Manis*, more than three times the length of the existing Javanese species; a *Hippopotamus*, belonging to the same subspecies, *Hexaprotodon*, as the forms from the Siwalik and Narbada strata of western India.

Upon the evidence of these remains I determined that the four skeletal fragments were of exactly the same age, and very probably early Pliocene. Further, these remains, in connection with the anatomical investigation of the skeletal fragments, have firmly convinced me that these fragments are all parts of one and the same skeleton. The total result of the discussion of these fragments that has been carried on by many eminent anatomists in no way contradicts this conclusion; on the contrary, it raises the presumption that it is highly improbable that they do not belong together.

A few anatomists hold that the fragments are parts of a human skeleton; according to others there is no doubt but that they belonged to individuals of the same race. Others, again, consider the femur to be quite human, while they think that the skullcap and teeth must have belonged to the most anthropoid of all anthropoid apes. A few anatomists, however, agree with me in the opinion that a femur entirely human in character might nevertheless belong to the same individual as this ape-like skull, because a similar function would entail a similar form. Besides, this femur



has certain peculiarities that I have not been able to find in a single one of some hundreds of thigh bones, so that it is not human in the usual sense of the word.

If we adopt the view that the skullcap is that of an ape, and, indeed, as must be acknowledged, that of the most man-like of all, but that the femur is that of a man, then both of these fragments must have been deposited at the same time in what was very probably an early Tertiary bed. We would then have in this case two specially important, but wholly unknown, closely related forms found together. Now, on the one hand, human bones have never been recognized below the Middle Pleistocene, much less as low as the Tertiary, and, on the other, but few remains of apes have been found, and these are much smaller, more significant, and by no means as human in character as the skullcap in question. There is therefore little probability that this view is correct. The view that these fragments were derived from different individuals of one and the same race has also very little to support it. After explorations which have been extended for five years over hundreds of square kilometers of exposed strata more than 350 meters thick and containing everywhere a numerous and homogeneous fauna, I have found, with but one possible exception, nothing which could be referred to this or any similar race.

According to all paleontological experience, the parts must have belonged to a single skeleton in case their anatomical configuration does not contradict such unity of origin. This is, however, not the case. The considerations advanced by many anatomists on this subject lead, when taken together, really to no other conclusion than that the fragments were derived from one individual. The more I myself have studied these fragments the more firmly I have been convinced of this unity of origin; and at the same time it has become ever clearer to me that they are really parts of a form

Dubois, who discovered the pithecanthropus bones, made this restoration of the probable shape of the entire skull. He finds the part of the skull extant very similar to the corresponding part of a gibbon's skull, but twice as large. He therefore followed the cranial architecture of that primitive ape in filling in the missing features.

intermediate between men and apes, which was the ancestral stock from which man was derived. They all show, though in somewhat different degree, intermingled human and ape-like characters.

I.—THE SKULLCAP

In the form of the skullcap similarity to that of the ape is undoubtedly predominant. Never yet has there been seen so flat and low a human skull, never yet, outside of the true apes, has so strong a projection of the orbital region been found. The skulls of Neanderthal and Spy and all microcephalic skulls are more highly vaulted, especially in the parietal region; the ratio between the central portion of the skull and the orbital part lying in front of the temporal fossa is quite the same as in the apes, differing widely from that of the lowest human skull, even that of Neanderthal and those of microcephali. Virchow has referred especially to this. It can be seen only on the left side, the right having suffered a notable loss of substance. The part of the wall of the orbit that lies in front of the deepest portion of the temporal fossa and belongs to the zygomatic process (external angular process) of the frontal bone is, in its antero-posterior dimension, about twice as large as that of the most ape-like human skulls. Further, it would be difficult to find in a human skull so strongly developed a *torus occipitalis transversus* as that of the Javanese skull, and the lower part of the *squama temporalis* of that specimen retreats outwardly, as it does in the apes.

Those who have followed the history of the Neanderthal skull are aware that there has never existed regarding it such divergence of opinion as to its man or ape-like qualities as has arisen concerning the Pithecanthropus. The two opposed views in that case were: Ape-like man or diseased man; the native of the Neanderthal has from the very first always been considered as an undoubted, real man. The human character of the Pithecanthropus is, however, very questionable. The skull of the gibbon almost doubled in size would not be very different from it in external appearance.

Comet

A NINTH magnitude comet has been discovered by Drs. Schwassmann and Wachmann of the Hamburg Observatory at Bergedorf, a suburb of Hamburg, Germany.

This new arrival in the sky is brighter than any other comet that has come within view of telescopes in recent months but it will take further observations and astronomical computations to determine whether there is a chance that it will become visible to the naked eye.

When discovered on May 2 it was in the area of the sky between the constellations of Hercules and the Crown, directly east in the evening sky and practically overhead at about one o'clock in the morning. Its right ascension is sixteen hours, one minute and forty seconds, while its declination is north 35 degrees and 57 minutes. It has no tail and is moving at a fair heavenly gait of 32 minutes of arc per day as seen from the earth.

Schwassmann and Wachmann are names often connected with comets since they have observed and reported to the International Astronomical Bureau at Copenhagen at least one comet each year for the past few years.

Astronomy
Science News-Letter, May 17, 1930

Fresh at 80°

FOODS do not have to be cold to keep fresh.

Even when the temperature is as high as 80 degrees Fahrenheit, meat and fish stay in a good condition for several days when stored in an atmosphere of carbon dioxide, D. H. Killeffer, of New York City, has reported to the American Chemical Society.

The method is not new, for patents were issued on it long ago, Mr. Killeffer says. The meat and fish absorb the gas but are not injured by it, he found. Of course, carbon dioxide stored foods last much longer at low refrigerating temperatures.

Chemistry
Science News-Letter, May 17, 1930

All-Steel Homes

THE new homes of America will soon be built with steel floors. Then their frames and partitions will be made of steel, and finally the family will be sheltered under a steel roof.

This replacing of the old order of building by new methods and material was visioned by Lee H. Mil-

ler, a New York engineer, before the American Iron and Steel Institute. Mr. Miller believes the use of steel in home building has many advantages now overlooked but which will be realized when people give up their traditional ideas of how a house ought to be built.

The first step in transforming the homes of America to steel is to bring into the humble dwellings the same kind of floor that is used on palatial ocean liners and in steel mills. Ocean liners take advantage of steel's adaptability to beauty by covering it with cork tile in mosaic patterns, while the steel mills give this kind of floor the hardest usage to which it can be put.

Floors have been picked as the logical entrance of steel into home building because through the years they have been the most unsatisfactory part of buildings. Steel floors are fire-proof, they can be given frequent new surfaces of tile, their weight is less than that of floors now in use and they will reduce ceiling-floor thickness several inches.

Once people begin to build homes with steel floors they will more readily accept steel in other parts of the house, Mr. Miller said. Then it is planned to introduce frames, roofs and partitions of steel.

But before that time comes Mr. Miller believes entirely new methods of construction must be devised. The greatest fault he finds with the few steel homes already built is that they were erected too much like frame houses.

Engineering
Science News-Letter, May 17, 1930

Planetarium

SYNTHETIC stars shine upon a man-made celestial canopy since America's first planetarium opened in Chicago recently.

Located on Chicago's lakefront is a new building with a large low dome. Enter it and you will be able to see, upon demand, a light-painted replica of the heavens as they look at any time, past, present or future, and from many places on the face of the globe.

In the center of the dome's interior stands an apparatus containing the eyes and mechanical brain of the Zeiss planetarium. At each end of a complicated cylinder structure, as tall as several men, are large globular knobs studded with lenses. Within are lantern slides with star images upon them and behind are powerful electric lights that project

IN VARIOUS SIE

the light pictures of stars upon the dome above.

Imagine a very clear night sky—the sort of a sky that one sees from a high mountain, far from the lights and dust of a city. Unlike the night sky ordinarily seen by city dwellers, the Milky Way can be seen down to the horizon and thousands of stars gaze down on the observer. And as imagination can have full reign, imagine that by some divinely conferred power, this sky can be altered at the will of the observer. It can be made to appear as the sky would be seen from any part of the earth, from the north pole to the south, or as it has appeared thousands of years ago, or will appear in the distant future. Such effects can not be seen in the real sky but they are obtained through the use of the planetarium.

The Adler Planetarium and Astronomical Museum is the gift of Max Adler, a retired Chicago business man. The instrument is the product of the ingenuity of Dr. W. Bauersfeld, engineer at the Carl Zeiss Optical Works at Jena, Germany. Prof. Philip Fox is director of the Adler planetarium.

While the Adler planetarium is the first in America, some fifteen similar instruments provide entertainment and instruction in European cities.

Astronomy
Science News-Letter, May 17, 1930

Shooting by Compass

GUNFIRE in future naval engagements may possibly be controlled by reference to compass direction instead of by the gunners or fire-control officers laying their sights directly on the target.

In the technical journal, *Engineering*, efforts of British naval authorities toward the solution of this problem are described. They have found that the ordinary magnetic compass is quite unreliable for the purpose of accurately directing fire, but that there is considerable promise in the gyroscope compass, which is not influenced by the masses of steel in the ships' hulls and armor, nor by the numerous motors and other electric appliances with which modern ships are filled.

Artillery on land, both field and coast guns, long since adopted the

SCIENCE FIELDS

method of "indirect fire," wherein the gunners never see their targets, but set their sights according to the directions of officers in observations posts or in aircraft. This was done in order to conceal the guns and thereby protect them.

The introduction of smoke screens and other concealing devices in naval tactics, together with the immensely increased ranges of modern naval guns, make it increasingly difficult for a ship's battery to be directed from the ship itself. It is expected that in possible future naval warfare most if not all of the gunfire and even the torpedo discharges will be directed by officers in observation aircraft high above the battle.

*Military Science
Science News-Letter, May 17, 1930*

Seek Earliest Americans

TWO scientific expeditions have just set out from the Smithsonian Institution for Alaska, to seek clues to the origin of the Eskimos and to pursue the quest for the mysterious first American immigrants.

Dr. Ales Hrdlicka, who has measured and studied thousands of Eskimos, both living and prehistoric types, is en route to the Kuskokwin River in southwestern Alaska. He hopes to fill in missing links in his chain of evidence as to what the relation may have been between the Eskimos and other American tribes, and how they link with the Asiatic tribes.

The second expedition about to depart is conducted by Henry B. Collins, Jr., archaeologist at the Smithsonian, accompanied by James A. Ford, of the Mississippi Department of Archives and History. This expedition is heading for St. Lawrence Island in the Bering Strait, where it will explore four ancient Eskimo villages a thousand years old or older.

"Until very recently it was not realized that the prehistoric Eskimos of Alaska were artistic and ambitious craft workers, far surpassing any modern Eskimos in their attainments," Mr. Collins said in outlining his plans. "St. Lawrence Island was a strategic center of this rare, lost culture of the Arctic. Two previous years of digging have revealed three stages of Eskimo life, showing that the artistic taste and the energy of the oldest known Eskimos eventual-

ly dwindled and degenerated.

"This year we hope to dig through the frozen soil into unprobed levels and so find out what led up to the Eskimo golden age."

The possibility of finding traces of far more ancient men, that is, some of the original immigrants who found their way from Asia into America, is another hope that spurs on the efforts of excavators in this Bering Strait region. Even if the earliest men entered America in inter-glacial times, when there was a land bridge across to Alaska, all the clues of their passing might not be lost, for the islands and shores remaining above water might still hold some of their tools or their bones, Mr. Collins believes.

*Anthropology
Science News-Letter, May 17, 1930*

Rescue

A SIMPLE, inexpensive radio set, made up of a fixed receiving coil and head phones, will enable trapped miners to receive messages from those working to rescue them.

Such a set has been found to receive Morse signals sent through 300 feet of sandstone and limestone over Mammoth Cave in Kentucky, said Prof. A. S. Eve, of McGill University, Montreal.

*Radio
Science News-Letter, May 17, 1930*

Fossil Leaves

LAVES millions of years old which still hold all the colors of autumn have recently been found in the newly discovered fossil leaf beds of Wheeler County, central Oregon, by Dr. Ralph W. Chaney, paleobotanist of the Carnegie Institution of Washington. The perfect preservation of the coloring in the leaf impression is attributed to minerals in the matrix.

The fossil flora found in the region is millions of years older than was first surmised, Dr. Chaney says, and probably will throw interesting light on numerous extinct plant species that formed a semitropical jungle in the Mitchell area of primeval Oregon.

Dr. Chaney found in volcanic shale an intact leaf, bearing virtually the appearance it did when it fell from a jungle tree millions of years ago. This leaf was carefully sealed in its matrix and will be sent to the University of California at Berkeley.

The plant horizon is just above the beds of the Cretaceous seas which swept over ancient Oregon, leaving an abundance of marine fossil in the Mitchell area.

*Paleobotany
Science News-Letter, May 17, 1930*

Theelin

PATENT rights on the female sex hormone recently isolated by Drs. E. A. Doisy, C. D. Veler and S. A. Thayer have been assigned by these scientists to St. Louis University. The product, which was first announced at the Physiological Congress in Boston, has been called "Theelin." This hormone is responsible for the development of feminine characteristics in women and has been likened in its effect to the "love potion" of old romances. It may be used in treating disorders of women and girls.

Ever since the announcement of the isolation of the hormone, the scientists and the university have been faced with many troublesome problems. Quack remedies of various kinds have used the discovery in unjustifiable advertising appeals.

In the interest of public health, ethical advertising and recognized standards of pharmaceutical manufacture, the president of St. Louis University has created a Committee on Grants for Research to deal with the problem. The Committee is composed of the dean of the School of Medicine, the associate dean and the professor of biochemistry.

One manufacturing concern in the United States has been given the exclusive right to manufacture and sell the new product for eighteen months. By the terms of the agreement between this firm and the Committee on Grants for Research, all developments in the preparation of the new product, its practical applications, and the discovery of its properties must be shared alike by the university and the licensee or licensees under the patent rights. In this way cooperative research by all those interested in the manufacture and sale of the product seems assured. The eventual income, if any, is to be used entirely for the furtherance of research in the School of Medicine.

*Medicine
Science News-Letter, May 17, 1930*

Forced

THAT married women do not seek employment because they prefer to work is indicated by a study just completed by the United States Women's Bureau. Of a group of married women applying for work in Denver, Colorado, 90 per cent. said that need compelled them to work, and 74 per cent. reported that they received no support from their husbands.

*Economics
Science News-Letter, May 17, 1930*

Ancient Haitians Feared Hurricanes

Archaeology

Figures of Hurricane God Unearthed on Island

PREHISTORIC Indians who lived in thick settlements in the tropical, storm-swept island of Haiti feared the hurricane more than anything else in the world, and so they worshipped a hurricane god with special power to stay the winds. Little figurines of bone and shell, unearthed in an ancient cemetery on the island, are visible proofs of the hurricane god's cult. They were discovered by Herbert L. Krieger, ethnologist of the Smithsonian Institution.

Mr. Krieger has just returned from an expedition to the Dominican Republic in eastern Haiti, where he made the most striking discovery of old skeletons and pottery so far unearthed in the West Indies. These represent the type of Indians met by Columbus on his second voyage to America.

For hundreds of years, inhabitants of the village of Andres on the southern coast have walked along their streets without realizing that they lived over a cemetery. The first

clue was found by Thomas Howell, a sugar grower, who unearthed a few bones. Mr. Krieger arranged to uncover the past history of the village, and his trenches led through the streets and even under the houses.

Beneath one native kitchen floor he found the skeleton of an Indian, crouched in sitting pose, as Indians often were buried. In front of him were four food jars and on each side of him a huge water jar.

The remarkably large number of 150 skulls was found. All of these are of the Arawak Indian tribe, a group whose naturally broad heads were further flattened by pressure and binding in childhood. The quantities of pottery buried with them are strikingly like the household wares made by mound-building Indians in the southeastern United States. Several double-decker clay jars were pronounced by Mr. Krieger to be like jars made by the Iroquois tribe. This bears out the folklore of the Iroquois which says that

they once lived in the southeast.

The estimate of Spanish explorers that the island had a million Indian inhabitants may not have been overdrawn, Mr. Krieger's discoveries indicate. The Arawak lived in fishing and farming communities, and one mound of discarded shells and kitchen refuse was piled for a mile along the Caribbean shore.

Mr. Krieger believes that he has settled the question of the mysterious Cibone Indians who were described by Spanish chroniclers as cave dwellers and people who could not speak. These legendary Cibone were in reality some of the Arawak Indians, who lived in caves, for excavations into cave homes revealed traces of the Arawak culture, and even the most deeply buried layer of specimens contained a stone axe typically like those of the Arawak.

The collection of evidence obtained has been divided between the National Museum of Santo Domingo and the U. S. National Museum.

Science News-Letter, May 17, 1930

Microscopic Movies

Microscopy

MOVIES showing microscopic cells 3,000 times larger than they actually are and bringing out slight variations in shade which are unnoticed by the eye looking through a microscope have been taken at the Rockefeller Institute of New York. Dr. Heinz Rosenberger reported recently to the Society of Motion Picture Engineers.

Dr. Rosenberger said that during the past few years scientists have been able to increase more than 10 times the magnifying power to which movies can be applied. Among the interesting discoveries made by these pictures is an undulating membrane surrounding white blood cells which is much larger than the cells themselves.

This membrane was invisible to the eye making examinations through ordinary microscopes, but it was brought out by the photo emulsion which often reveals differences in shades too fine to be detected by the eye. Dr. Rosenberger pointed out that the usual stains used to outline cells cannot be employed with the camera. When subject to the

great light necessary in taking the pictures the stains cause the cells to act abnormally and to die fast.

"Difficulties of high magnification photography increase very rapidly, by arithmetical progression," Dr. Rosenberger said. "Suppose we are looking at the moon through a telescope. When it is a low powered telescope the moon will move slowly across the field of vision, due to the rotation of the earth. With medium power telescopes the moon will apparently move very much faster across the field, while with high powered telescopes one can hardly follow its rotation."

The same applies to microscopes, it was explained. As magnifying power increases the objects apparently move faster and make necessary more frequent exposures. When exposures must be made more often the time of exposure is decreased and the intensity of light required is increased. More light means that the delicate objects being photographed will be more readily injured. Difficulty of holding the focus and reducing vibration effect is also increased with high magnification.

Science News-Letter, May 17, 1930

Mould Kills Bacteria

One of the moulds (a *Penicillium*) has been found to kill cultures of some bacteria, notably pus-forming cocci and diphtheria bacilli. This interesting news comes from Dr. Alexander Fleming of the Laboratory of the Incubation Department, St. Mary's Hospital, London.

The mould is similar to the common fungus that sometimes spoils oranges and other fruits. Even when cultures are filtered, the resultant liquid which is called "penicillin" is effective. It can be kept for some time if it is neutralized, but if not it loses its power after from 10 to 14 days at room temperature. It does not affect all bacteria, for instance the thyroid group are resistant to its action; on the other hand, staphylococci, streptococci and diphtheria bacteria are killed rapidly.

Penicillin is not toxic to animals even when given in enormous doses, and it is also non-irritant. Is is therefore possible that it may turn out to be a useful antiseptic for combating infections caused by certain pathogenic bacteria.

Bacteriology

Science News-Letter, May 17, 1930

NATURE RAMBLINGS

By Frank Thone



Trillium

An old proverb, known to folk of many tongues, declares that "all good things come in threes."

The trillium certainly keeps this rule, and the trillium is a very good thing, one of the finest flowers of the springtime woods. Its leaves are trefoils, its sepals are three, its shining petals are three, its stamens stand in two rings of three each, and the pistil at its center is three-angled, containing three seed-chambers. If the trillium were an Irish plant instead of an American, St. Patrick would certainly have used it in his famous argument with the chief whom he converted.

There are some thirty species of trillium in all, ranging across the United States, with a few in eastern Asia. There are none in Europe. Perhaps the handsomest is *Trillium grandiflorum*, which is fortunately also the most abundant. Its broad-petaled, open flowers form veritable galaxies through the rich, moist woods almost everywhere east of the Mississippi, and reach in more scattering fashion through the timber-strips along the streams in the prairie states. In the western part of its range, however, it has suffered from over-picking, and there are many children in the corn belt who have never seen a trillium.

In the South, growing in the hardwood "hammocks," there is another trillium, not quite so large-flowered as the *grandiflorum* species but worthy of note in another connection. It has decided tendency to depart from the fundamental rule of three, and very frequently will turn up with four leaves and four petals.



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Psychiatry

New Discoveries Applied to Ancient Malady

THE family doctor and the child specialist are needed to join vigorously in the fight against the age-old disease of epilepsy, the convulsive malady that afflicted Julius Caesar and is still one of the chief medical mysteries. This call was sounded by Dr. Douglas A. Thom, of Boston, at the First International Congress on Mental Hygiene, held in Washington. Dr. Thom recalled that the whole mental hygiene movement traces its origin back to a case of epilepsy. Clifford Beers, of New York, who has given twenty years to his conviction that mental health needs to be actively safeguarded, was originally driven into a nervous breakdown by fear that he might become an epileptic.

The physician who notes the first appearances of convulsions in a child has a better chance to prescribe changes in the child's way of living, so as to make him healthier and less nervous and so lessen the chance of the convulsions persisting, Dr. Thom stressed. Emotional troubles are of greatest importance in bringing on convulsive attacks in those who have a tendency to epilepsy, he said.

All the advances of modern laboratory technique have been called upon to find out whether an abnormal bodily process lies at the root of convulsive disorders, Dr. Thom declared. New found discoveries on psychology and mental diseases have been utilized by the specialists who are seeking the source of epilepsy in the individual's temperament. And still doctors are confronted with a large army of victims of epilepsy, and the basic cause still eludes detection. At present, the physician should study the patient and treat him, rather than try to treat the disease, Dr. Thom advised.

The stress of city life is more likely to aggravate convulsive maladies than country life, judging by the number of epileptics in the United States, Dr. H. M. Pollock, of the New York State Department of Mental Hygiene showed. Although more men than women enter institutions for treatment for epilepsy, Dr. Pollock believes that this is because women more often live sheltered lives. The epileptic may be able to live at home and among friends without serious difficulty, whereas in business or public life the uncertainty of seizures sometimes proves too serious a handicap.

Restless

AMERICANS are restlessly experimenting with sex freedom, and the experimenters are failing, Dr. Hornell Hart, professor of social economy at Bryn Mawr College, told the Congress.

In nineteenth century America, the idea that a man or a woman must have one partner for life probably became more pervasive than ever before in the history of human marriage, Dr. Hart said, but now the cult of liberty has made immense inroads in sex relations.

"Soviet Russia has set up freedom in love as an avowed ideal," he continued. "The rest of European-American civilization is dotted with social circles in which experiments with Soviet sex mores are being tried."

The typical outcome of this casting off of repressions is disillusionment and not fulfillment of personality, Dr. Hart declared.

Wreckage produced by the modern sex revolt was traced by him to four causes. "Science has not completely conquered the physical dangers of promiscuity," he said. The experimenters do not carry on their emotional researches in cool intelligent fashion, as the number of unintended babies and cases of disease indicate.

The second cause of failure found by him is that going against society's conventions is a severe emotional and mental strain, which may even break down the personality.

"Puritanism, in various degrees of modification, is widely prevalent in our civilization," he said in explanation. "It can no more be neglected in formulating a program for one's personal mental hygiene than can measles in formulating programs for public health."

The third reason cited to show why the experimenters fail is that, although they crave thrills and adventure, they also feel a deep need for a permanent love and the things that go with it. The last reason is the impossibility of keeping higher values of life vivid when swept by passion in such affairs.

Science must face fearlessly all sides of the question involved, was Dr. Hart's recommendation: "Personal experimentation is a costly method of discovering the truth. The psychiatric adviser needs to cultivate

the means of letting youth learn vicariously, through the sufferings of others."

In concluding, the speaker declared that "It is perhaps no accident that Euro-American civilization—the most monogamistic of history—has been the one to rise highest and most swiftly in technology, in science, in education, in political organization, in social legislation, and in music."

Alcoholism

THE Dutch no less than the Americans have their problem of alcoholism, and they have met it with some success by establishing consultation bureaus for alcoholism in all the greater towns of Holland, Dr. K. Herman Bouman, of the University of Amsterdam, reported to the International Congress on Mental Hygiene. Dr. Bouman said that these bureaus are now subsidized by state, province, and city because the authorities have realized that it is a cheaper proposition to keep up an individual's working power than to have to rebuild that power once it has been lost.

Some of the chronic drinkers come of their own accord to the bureaus to get the medical, psychiatric, and social assistance offered. Some are sent by relatives, doctors, and social institutions. The courts send others.

The picture of alcoholism has changed in Holland, partly from the work of the bureaus, partly from pressure of public opinion, legal measures, and the temperance movement, Dr. Bouman said. Alcoholic admissions to hospitals have decreased. There are fewer crimes of violence. The amount of alcohol consumed in Holland is decreasing.

Science News-Letter, May 17, 1930

A psychologist suggests that the super-film of the future may be accompanied by a sequence of scents wafted through the theater, to bring the audience more completely into the atmosphere of the forest, the apple orchard, the farmhouse kitchen, or other scenes of the story.

How a disease wipes out human beings who are not resistant to it, was shown when influenza was introduced into a Labrador community of 360 Eskimos, causing the death of 300.

National Parks Called University

General Science

Secretary of the Interior Describes Educational Work

THE U. S. National Park system as a great educational institution, a university in which anybody can enroll without entrance examinations, was pictured today in a radio talk by the Hon. Ray Lyman Wilbur, Secretary of the Interior. Dr. Wilbur spoke over the Columbia Broadcasting System, under the auspices of Science Service.

Dr. Wilbur said, in part:

"The United States is fortunate in possessing, in its matchless national parks and monuments, a system of outdoor museums which offer almost unlimited opportunities for enjoyment. I have been asked to talk especially about education in the national parks. The term sounds formidable, but as applied to the national parks education is but one form of the enjoyment to be derived from a park visit. Our Nation is still a young one, and like all young things is consumed with a curiosity as to the 'why' of things. It is that spirit which has made us successful in the development of the resources of our country and in science and invention. So it is but natural that it must be carried into our recreation.

"It is not enough for most of us to go to a national park, hurriedly view its highest mountain, greatest waterfall, or immense canyon, and then go on to something else. Except for the almost professional 'tripper,' most of us want to know something about the mountain, whether it was once a volcano, and if not what caused it. We want to know how the canyon came to be, and the cliff over which the falls tumble. So, for lack of a better word, we call the service which meets this demand for information educational."

As a specific example of the educational function of the National Parks, Dr. Wilbur selected one feature of the Yellowstone.

"It is said to be a dying volcanic region; that the geysers are the last gasps of the old volcanic forces," Dr. Wilbur continued. "This may be so, but after viewing one spot in the park known as specimen ridge, one wonders if the age in which we live is not merely an interlude between two great volcanic periods. Specimen Ridge is a 2,000-foot cliff where Nature in some way cut through a great

plateau. Imbedded in this cliff may be seen the remains of twelve fossil forests, one above the other. The scientific explanation is that the first forest was engulfed and buried under an irresistible flow of volcanic mud and ash. Then volcanism ceased and sufficient earth accumulated on top of the ash to support another forest. This later suffered the fate of the first forest. So for countless ages volcanic activity followed periods of quiescence during which forests thrived. Who knows but that Yellowstone's forests of today may be the thirteenth fossil forest of geology's tomorrow?

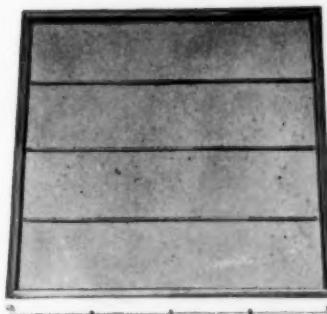
"Visitors to the region are particularly interested in the hot springs, and one of their frequent questions is, 'What happens to the hot springs in winter; do they freeze up?' Others, when told of the plants of the arctic zone to be found in the park, ask, 'How did arctic plants get to Yellowstone from the Arctic Circle?' Since asking such questions is one of the

amusements of park visitors, answering them has become one of the important duties of the park forces.

"The so-called educational work in the national park consists in explaining to those interested, in popular form, the peculiar formations which are the distinctive features of the park, and telling which of her powerful tools Nature used in forming them; and in giving information about other natural-history trips of the areas. This information is conveyed in three principal ways—through trips of varying duration conducted by ranger-naturalists; through lectures given by naturalists and visiting scientists at the hotels, lodges, and camp-fires in the public camps, and through the museums, which are fast becoming important tourist centers."

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Honor Roll of Patentees—Continued

the patent office started to number serially the patents granted, over one million, seven hundred thousand patents have been issued. Within five years, the number will probably have passed the two million mark. Two million patents in a single century!

This record becomes even more striking when we realize that the majority of these records of the nation's inventive ability have been issued during this century—in fact, during the last two decades. The first patent granted in 1910 bore the number 945,010. Yet the latest number is over 1,746,229. Almost a million patents have therefore been issued in the last 20 years. At the beginning of this century inventors were taking out about twenty thousand patents a year; now nearly fifty thousand are granted annually.

Many revolutionary changes in our mode of living are represented in these million patents. Modern, twentieth century inventions enable us to travel safely by air; they make it possible for us to see by radio; they provide a magic wand for converting messy, smelly substances into delicate perfumes and aromatic flavors for our food. They change cornstalks and farm wastes into beautiful fabrics for our adornment, stout building materials for our shelter, or gas for illuminating our homes. In the dusty leaves of the patent office files may be found the thrilling and romantic story of the giant strides of civilization's progress.

Yet some of the patents are quite trivial—some applied for in a spirit of fun rather than with any serious purpose of scientific advancement. It is told of Carleton Ellis, an inventor who has applied for a very large number of patents, that he was joking with friends in his club one day when one laughingly said:

"I believe you are trying to patent everything under the sun. You will be getting a patent on a bone for a dog, next."

Mr. Ellis did not forget the joke. When he had found a suitable preparation for dog biscuit, he made it up in the shape of a bone and secured a patent on the product. And the joke paid Ellis many thousands of dollars.

An application for a patent, whether it be for an amusing rather than useful device for the prevention of snoring, for a square collar button that will not roll under the chiffonier, or

for a new design of airship that may revolutionize our methods of transportation—if the papers are submitted in the proper form and accompanied by the twenty-dollar fee, must be given due consideration by the busy examiners of the Patent Office.

Indeed the work in the Patent Office starts even before the application is submitted. In one long room of that famous old building in Washington, you may enter at any hour of the day and witness a strange spectacle of feverish activity. Row after row of tables are crowded in between files, and each table is supplied with odd-shaped racks. Each table, too, is crowded with men and women patent attorneys, leafing through files of patents which are held for convenience in wooden upright boxes. They work eagerly and swiftly with scarcely a pause except for the purpose of exchanging one file of patents for another. It is exactly as though they were all engaged in some competitive examination where speed was the principal requisite.

These are attorneys searching, for their clients, to discover whether the "invention" is really new or whether a patent has already been granted for the same idea. The layman would be surprised to know the number of times the same simple idea may be "invented" by men working entirely independently in widely separated parts of the world—perhaps living in different generations.

The patent attorney, or the patent examiner is not surprised. It is an old story to him. He will advise you, "Never apply for a patent even on what seems to you the most revolutionary, the most world-rocking of inventions until you have first had a search made in the U. S. Patent Office."

Many are the hopes that die in that long search room. Many are the inventions that are discarded there. And yet the applications actually filed in the office number nearly ninety thousand a year!

After the application makes its official entry with its attendant train of drawings, oaths, certifications, and red tape, then another search must be made, this time by the Patent Office Examiner. All the patents on record in the Office are filed according to class, the time-recording mechanisms in one class, the sound devices in another, the plastics in another, and so on. Each examiner has charge of one

particular class. When an application comes in which belongs in that class, he must search every patent filed in that class and also all available published literature on the subject to be sure that no claims are duplicated.

It is seldom possible to grant the patent on the first application. Perhaps the wording of the claim is so broad as to be unfair. An inventor might, for example, discover the idea of laminating glass in such a way as to make a shatter-proof glass. This is a patentable idea. But it would not be fair for him to word his claim in such a way as to cover the laminating of all known and unknown materials whether for the purpose of shatter-proofing or not. In this case the application is either rejected or returned to the inventor for rewording.

And a great many are rejected each year. Of the 90,000 filed, nearly half are rejected, the principal reason being for duplication of an old idea.

An examiner in time becomes familiar with the patents and inventors in his own class. Many of the patents are issued to professional inventors, men who devote their whole time to devising new machines, or new parts of old machines, or improved methods and processes for use in industry.

Science News-Letter, May 17, 1930

An investigation of the average life-span of household furnishings shows that a rug lasts nine years, a living room chair usually survives 12 years, and a dining room table 15.

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Locusts Threaten Eastern Europe

Entomology

THE locust plague that has appeared clear across northern Africa, from Egypt almost to Gibraltar, and has extended into the Near East and the Balkan countries, is a distinct menace to the great wheat areas of eastern Europe but is not likely to make trouble in the countries with which American travellers are most familiar.

This is the kernel of the opinion of entomologists of the U. S. Department of Agriculture, as given to Science Service. Locusts are more or less chronic in what might be called the drier cereal areas all over the world. The wheat and barley lands of northern Africa, Palestine, Asia Minor, Mesopotamia, and all the Black Sea basin, both in Europe and in Asia, have to contend with them every year. But some years are much worse than others, and the present outbreak may indicate 1930 as one of the bad ones.

The presence of swarms of the insects in Roumania is the first hint of big trouble, for Roumania is a major wheat country. If the locusts spread farther and reach Ukrainia and other parts of Russia, which are comparable with the western United States and Canada as wheat regions, the results might be disastrous. There have been no indications as yet of locusts in Russia, but the

real crisis will come a little later, when warm weather sets in.

The old-world locust is a large, long-winged grasshopper, that flies in swarms so vast as to darken the sun. When such a swarm settles on a field or orchard it often wipes out every trace of green leaf and stem in fifteen minutes or less. The devastation they can cause, and the terror they bring, have never been told more graphically than by the writer of the Book of Exodus, in chapter 10, verses 12 to 20. "There remained not any green thing in the trees, or in the herbs of the field" has been written many times since, and of many other lands besides Egypt.

The locusts of Europe, Asia and northern Africa are all members of one species, usually called the Moroccan locust. There is a short-winged locust, but it is considered by most entomologists to be simply a form or life-phase of the long-winged locust. During part of its life the swarm will travel by hopping and crawling along the ground. In this stage it can be fought by poisoned baits, by trenching and by various other mechanical and chemical means. But when the insects have grown their long wings and taken to the air, no method so far devised can avail to stop them.

Science News-Letter, May 17, 1930

Polish Rhinoceros

Paleontology

ONE of the most interesting of recent finds in paleontology has been the complete carcass of a Pleistocene rhinoceros, unearthed in an abandoned mine in the Starunia region in Poland. Skin, hair, muscles and all other tissues were well preserved, owing to the sealing up of the monster in a kind of oily earth, which kept out the micro-organisms of decay for many thousands of years.

Bringing the big body to the surface presented a considerable problem in mining engineering, for the shaft of the old mine was too small and its sides slippery and treacherous. The Polish Academy of Science borrowed a company of soldiers from the Army, and with their assistance enlarged the pit and finally hauled their bulky find to the top.

The carcass has been dissected and studied with the care that the great rarity of such a find merits. Its skin and skeleton will become permanent exhibits.

The SCIENCE NEWS-LETTER is indebted to Tytus Filipowicz, Polish Minister to the United States, for the photograph on the cover, showing Prof. Jan Stach, director of the physiographic museum of the Polish Academy of Science, measuring the massive skull.

Science News-Letter, May 17, 1930

Shade trees are often "gassed" and even killed by illuminating gas from leaky pipes in the soil.

Rubber automobile bumpers are being featured to absorb the crash before it reaches the chassis.

Animal Autobiographies

Is the title of a series of the pleasantest nature stories you have read in a long time. Dr. Edward H. Williams is the author. He has observed and painstakingly recorded the behavior of animals; then thrown his observations into story form and tells the story from the imagined viewpoint of the living things in question.

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FIRST GLANCES AT NEW BOOKS

SOCIAL CONTROL OF THE MENTALLY DEFECTIVE—Stanley P. Davies—*Crowell*, 389 pp., \$3. The day of looking upon the feeble-minded with superstition or despair is gone. This excellent book describes the changing concepts and new development of facts regarding the mentally handicapped. It shows how practical methods are being devised to make the most of the abilities of the feeble-minded and at the same time to safeguard society against those cases that are social hazards.

Sociology—Psychiatry
Science News-Letter, May 17, 1930

INSTRUCTIONAL TESTS IN CHEMISTRY—Earl R. Glenn and Ellsworth S. Obourn—*World Book*, 76 pp., 36c. Enabling the student and teacher to distribute their time and effort more effectively. The 36 tests and record chart are intended for use throughout the course as a guide to study and an index of achievement. They are also useful for self-instruction. The short-answer form is used.

Chemistry—Education
Science News-Letter, May 17, 1930

INSTRUCTIONAL TESTS IN PHYSICS—Earl R. Glenn and Ellsworth S. Obourn—*World Book*, 59 pp., 32c. Not alone an index of the student's achievement but a stimulus and guide to further study. The twenty-five tests are arranged by subject, and each covers a wide range of difficulty. The questions are of the short-answer type.

Physics—Education
Science News-Letter, May 17, 1930

THE GENUS HAPLOAPPUS—Harvey M. Hall—*Carnegie Institution of Washington*. A critical examination of the generic characters of *Haplopappus*, which will be of value to students of systematic botany.

Botany
Science News-Letter, May 17, 1930

PEOPLE OF THE SMALL ARROW—J. H. Driberg—*Brewer and Warren*, 338 pp., \$3. A novel with people of a Uganda tribe as characters, living through dramatic experiences of famine, buffalo hunting, love making, bewitchment, death. The writing is in the style of old tales and sagas, which fits this sort of narrative very well. Illustrated strikingly with drawings in black and white by Pearl Binder, the author's wife.

Ethnology
Science News-Letter, May 17, 1930

AMERICAN—Frank B. Linderman—*John Day*, 313 pp., \$3.50. The life story of a Crow Indian, Chief Plenty-Coups, written down in simple, good English that preserves the atmosphere of the Indian's way of telling and yet makes easy reading. Memories of this Indian, now more than eighty years old, carry the reader back to the native life of the northwestern plains. The story ends with the passing of the buffalo, for Plenty-Coups felt that this catastrophe broke off the accustomed life of the people. The "sign-talker" who won the confidence of the aged chief and recorded his career has been a trapper, hunter, cowboy, and a friend of Indian groups for more than forty years.

Ethnology
Science News-Letter, May 17, 1930

INVENTION AND SOCIETY—Waldemar Kaempffert—*American Library Association*, 38 pp., 35c. This latest pamphlet in the "Reading with a Purpose" series not only recommends books but discusses the philosophy and mechanism of invention's growth. After analyzing the trend of invention, the author predicts that industrial group research will give the lone inventor too much competition. He surmises that "possibly Edison may be the last of the great heroes of invention."

Invention
Science News-Letter, May 17, 1930

PRINCIPLES OF SOIL TECHNOLOGY—Paul Emerson—*Macmillan*, 402 pp., \$3.25. A new and thoroughly modern textbook which will be a welcome addition to the literature of soil science.

Soil Science
Science News-Letter, May 17, 1930

INDIAN CORN—James B. McNair—*Field Museum*, 33 pp., 25c. A well-illustrated little pamphlet telling the essential facts about the history, botany and uses of our most important cereal.

Botany
Science News-Letter, May 17, 1930

PHILIPPINE PLANT LIFE—J. W. Ritchie and Julia P. Echavarria—*Silver Burdett*, 244 pp., 96c. This is a reader intended for use in Philippine schools. It imparts the scientific background of familiar and interesting native plants in simple sentences made of short English words, so that the young Filipino may get his botany and his English in one painless operation.

Biology
Science News-Letter, May 17, 1930

BIO-DYNAMICS: THE BATTLE FOR YOUTH—Boris Sokoloff—*Covici-Friede*, 320 pp., \$3. Dr. Sokoloff, whose name has become familiar through reports that he had found a way to check cancer by glandular extract and an iron salt, presents in this book his biological conception. The book is non-technical but not intended for popular consumption. The author states that it is written for "those interested in the problems of life in the most profound sense of the word."

Biology
Science News-Letter, May 17, 1930

OUR CHANGING HUMAN NATURE—Samuel D. Schmalhausen—*Macaulay*, 510 pp., \$3.50. Those who are interested in sex and consider it the most important thing in human life will eagerly welcome Dr. Schmalhausen's book. Those who do not feel that way about it will probably heartily dislike it. The latter doubtless fall into the author's classification of Puritans, who consider sex sinful, and Impuritans, who consider sex sinless but insignificant. The so-called sexual revolution, sex in literature, various psychological concepts of sex, and mankind's changing attitude toward sex are among the topics taken up in this book.

Psychology-Sociology
Science News-Letter, May 17, 1930

DISEASE AND THE MAN—George Draper—*Macmillan*, 270 pp., \$4.50. The book is one of the Anglo-French Library of Medical and Biological Science, the purpose of which is to further the interchange of medical and biological thought between British and French scientists. Each book is printed in both languages. The present volume presents Dr. Draper's theory that the physician should study not only the disease but also the man. Of interest chiefly to physicians and medical educators.

Medicine
Science News-Letter, May 17, 1930

THE FISHES OF THE FAMILIES AMIIDAE, CHANDIDAE, DULEIDAE, AND SERRANIDAE, OBTAINED BY THE UNITED STATES BUREAU OF FISHERIES STEAMER "ALBATROSS" IN 1907 TO 1910, CHIEFLY IN THE PHILIPPINE ISLANDS AND ADJACENT SEAS—H. W. Fowler and B. A. Bean—*Smithsonian Institution*, 334 pp., 60c. Of interest to systematic ichthyologists.

Ichthyology
Science News-Letter, May 17, 1930